

William C. Haneberg

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Engineering Geology
Hydrogeology
Geomechanics
Structural Geology
Geologic Hazard Assessment

EMPLOYMENT

Haneberg Geoscience, Port Orchard, Washington

Consulting Geologist, 7/99 - present. Planning, execution, and completion of geologic studies with emphasis on landslide hazards and other forms of ground failure. Work has included:

- Field-based and modeling studies of slope instability in support of open-pit mine operations, timber harvest planning, environmental analysis, and potential litigation.
- Formulation of continuum models of deformation above a mid-crustal magma body, including the effects of topography and the regional state of stress, with implications for tiltmeter placement and data interpretation.
- Development of physically based probabilistic methods of spatially distributed (GIS) landslide hazard assessment (including seismic effects) using first-order, second-moment and Monte Carlo methods.
- Development of web browser based software for probabilistic modeling of forested slope stability, infiltration, and open channel flow using first-order, second moment methods.

Department of Geology, Portland State University, Portland, Oregon

Adjunct Associate Professor of Geology, 9/00 - 12/00. Taught structural geology as a sabbatical replacement.

New Mexico Institute of Mining and Technology, Socorro and Albuquerque, New Mexico

1) *Senior Engineering Geologist and Assistant Director*, New Mexico Bureau of Mines and Mineral Resources— Office of State Geologist, 12/98 - 6/99. Previously *Engineering Geologist and Assistant Director* (5/94 - 12/98) and *Engineering Geologist* (1/89 - 5/94). Tenure granted 1992. Planning, execution, and completion of applied research and professional practice concentrating on geologic hazards and hydrogeology in New Mexico, including presentation of results at scientific meetings and in peer-reviewed scientific publications. Work included:

- Mapping, monitoring, and geomechanical modeling of ground deformation and failure associated with land subsidence due to groundwater pumping near Deming, NM. Deformation was monitored using an array of 0.1 microradian sensitivity tiltmeters and modeled using a combination of analytical thin and thick plate flexural solutions for elastic layers and multilayers.

- Nonlinear regression analysis of geophysical log porosity data and geomechanical modeling of Albuquerque basin aquifer system compaction potential using a porosity gradient method.
- Field, petrographic, and modeling studies of the influence of faults on groundwater flow in the Albuquerque basin. This included the development and application of both analytical and finite-difference models of groundwater flow (including simulation of nonlinear problems with pressure dependent permeability).
- Geomechanical modeling of the influence of topography and regional stress states on the local state of stress beneath the Rio Grande valley near Albuquerque. This work included the development of analytical solutions for stresses and displacements in elastic half spaces with topography and variable states of regional stress.
- Laboratory determination of stress-dependent hydraulic conductivity in weakly lithified sediments from the Albuquerque basin.
- Field-based landslide hazard mapping along a proposed transportation corridor through the Rio Grande gorge.
- Field-based geologic mapping and aerial photo interpretation to assess the influence of a forest road on debris flow recurrence, travel distance, and deposition in a forested alpine watershed near Red River, NM.
- Forensic investigation of a debris flow mobilized from an irrigation-induced landslide near Cordova, NM. Project included detailed engineering geologic mapping, soil mechanics lab testing, limit equilibrium slope stability analysis to evaluate failure scenarios, and estimation of debris flow rheology.
- Service on a review board assembled to investigate the events that led to reactivation of a large dormant landslide adjacent to Costilla dam in northern New Mexico. Work included forensic review of pre-construction and construction geological and geotechnical data, slope stability analyses to evaluate the conditions necessary for landslide reactivation, and representation of the State of New Mexico during an arbitration hearing. Also served as a geotechnical consultant during the subsequent first filling of the reservoir.
- Mathematical modeling of the influence of host rock mineralogy on frictional heat dissipation, with implications for the origin of pseudotachylyte along faults.
- Statistical characterization and probabilistic modeling of soil lead distribution at an abandoned smelter site in Socorro, NM.
- Investigation of numerous cases of structural distress related to hydrocompactive soils.
- Numerical modeling of groundwater flow and landslide susceptibility, including the effects of rainfall infiltration, using finite-difference and analytical methods. This included a probabilistic modeling component based on Monte Carlo and first-order, second-moment methods and development of linearized pore pressure diffusion models.
- Service on various state and local committees involved with water resources planning and geologic hazard assessment (see Professional Service). Service on hiring, tenure, and other committees within New Mexico Tech. Oversaw day to day operations at agency's Albuquerque branch office and supervised up to 5 student, support, and research employees.

2) *Faculty Adjunct*, Department of Earth & Environmental Sciences and Department of Mineral & Environmental Engineering, 1/90 - present.

- Taught or team-taught advanced undergraduate and graduate courses in geological engineering, geology, geophysics, and hydrology. Supervised graduate student research and served as a member of M.S. and Ph.D. research committees. See lists of graduate students supervised and courses taught at the end of this resume.

Department of Geology, University of Cincinnati, Cincinnati, Ohio

Graduate Teaching/Research Assistant, Department of Geology (9/82 - 5/85, 9/86 - 5/88) and *Hydrogeologist*, Groundwater Research Center (6/87 - 8/87).

- Assisted in teaching of various undergraduate/graduate geology courses.
- Assembled geologic information and performed preliminary well hydraulics calculations for a proposed experimental wellfield.
- Assisted with preparation of geologic slice maps illustrating bedrock and surficial geology for use in 3-D landslide hazard assessments.

Manitou Exploration Company, Inc., Granville, Ohio

Petroleum Geologist, 6/85 - 7/86.

- Interpreted rotary drill cuttings and geophysical logs in order to make oil and gas well completion recommendations.
- Conducted geologic studies to site new wells, including computer programming for trend surface mapping of geologic attributes.
- Performed reserve analyses for individual wells and probabilistic depletion curve analyses for a small oil field.

Bowling Green State University, Bowling Green, Ohio

Graduate Teaching Assistant (summer field camp), Department of Geology (6/82 - 8/82) and *Undergraduate Research Assistant*, Department of Geology (1/82 - 5/82).

EDUCATION

Ph.D., 1989, Geology, University of Cincinnati, Cincinnati OH 45221. Primary emphasis: geomechanics. Secondary emphasis: engineering geology and hydrogeology. Dissertation research: monitoring and modeling of rainfall-induced pore water pressure changes in a landslide complex along the Ohio River valley. Advisor: Arvid M. Johnson.

M.S., 1985, Geology, University of Cincinnati, Cincinnati OH 45221. Major emphasis: structural geology.

B.S. cum laude, 1982, Bowling Green State University, Bowling Green OH 43403. Major: geology. Minor: general science.

PROFESSIONAL CERTIFICATION AND LICENSES

Certified Professional Geologist, American Institute of Professional Geologists, #10311
Professional Geologist, Engineering Geologist, and Hydrogeologist State of Washington, #501
Professional Geologist, State of Wisconsin, #356
Accredited Mathematica Consultant, Wolfram Research, Inc.

PROFESSIONAL AFFILIATIONS

Fellow, Geological Society of America
Member, American Geophysical Union
Member, Association of Engineering Geologists

SELECTED CONSULTING PROJECTS AND RESEARCH CONTRACTS

Lerner & Lerner (Academic Editors and Publishers). *World of Earth Science* contributing author. 2002.

US Forest Service, Clearwater National Forest. Review of slope stability and erosion aspects of North Lochsa Face ecosystem management plan EIS. 2001.

New Mexico Bureau of Geology and Mineral Resources. Mathematical modeling of deformation above a mid-crustal magma body along the Rio Grande rift. 2001.

Scotia Pacific Company. Development and application of physically based probabilistic landslide hazard assessment models for watershed analysis and forest planning. 2001.

Vorys, Sater, Seymour and Pease. Forensic investigation and expert services regarding landslides, precipitation, mine subsidence, blasting vibrations, and structural distress in a residential area. 2000.

Chino Mines Company (Phelps-Dodge Corporation). Engineering geologic mapping of rock slopes and adjacent to an open pit mine. Rock slope monitoring system design. 1999-2000.

Daniel B. Stephens & Associates. Open-pit mine hydrogeology and slope stability proposal review and comment. 1999.

National Science Foundation. Hydrogeologic characterization of the Sand Hill fault zone, Albuquerque Basin, New Mexico (co-PI with L.B. Goodwin, P.S. Mozley, and A.L. Gutjahr). January 1998 - December 2001.

William Lettis & Associates. Liquefaction mapping in the Albuquerque/Santa Fe corridor. January-December 1998. PI on subcontract with Wm. Lettis & Associates as part of a National Earthquake Hazard Reduction Program (NEHRP) grant.

New Mexico Department of Public Safety, Earthquake Preparedness Program. Engineering geologic and preliminary liquefaction susceptibility mapping of shallow Rio Grande alluvium, Albuquerque, New Mexico. July 1997 - September 1998.

New Mexico Department of Public Safety, Earthquake Preparedness Program. World Wide Web earthquake education site and public access computer. July 1997 - June 1998.

New Mexico Department of Public Safety, Earthquake Preparedness Program. Development of new tools to evaluate paleoseismicity (with L.B. Goodwin and T.M. Whitworth). September 1997 - August 1998.

City of Albuquerque, Public Works Department, Water Utility Division. Characterization of major hydrogeologic units in the northern Albuquerque Basin (with J.W. Hawley). October 1993 - September 1995.

New Mexico Engineering Research Institute. First-filling monitoring of Costilla Dam. June 1993 - December 1994. \$17,086.

New Mexico Interstate Stream Commission. Costilla Dam Independent Review Team. July - December 1992 and January - June 1994.

New Mexico State Highway and Transportation Department. Rio Grande gorge highway corridor study, Rinconada to Pilar. May - June 1992.

U.S. Geological Survey and New Mexico Water Resources Research Institute. Cyclic flexure of surficial strata in response to seasonal groundwater withdrawal from the Mimbres Basin, New Mexico. July 1991 - October 1992.

New Mexico Institute of Mining and Technology, Research Council. Use of seismic reflection profiles to characterize soil deformation associated with earth fissures and groundwater withdrawal near Deming, New Mexico. 1990.

The Hillside Trust. Drainage of a natural colluvium-mantled hillside in western Cincinnati. 1987-1989.

ARCO Exploration Company. Fractures in the Cambrian Rome Formation near Wytheville, Virginia. 1983-1985.

Geological Society of America Fractures in the Cambrian Rome Formation near Wytheville, Virginia. 1983 (Penrose Grant).

PROFESSIONAL SERVICE

Editorial Policy Board Member, *Environmental & Engineering Geoscience*, 2001- present.

Associate Editor, *Environmental & Engineering Geoscience*, 1995 - 2002.

Organizer, Nothing Ventured, Nothing Gained: Geology and Risk Assessment in the 21st Century. Geological Society of America 2001 Annual Meeting topical session.

Convener, Faults and Subsurface Fluid Flow: Fundamentals and Applications to Hydrogeology and Petroleum Geology. Geological Society of America Penrose Conference, September 1997 (with J.C. Moore, L.B. Goodwin, and P.S. Mozley)

Convener, Quantifying Hazardous Natural Processes for Risk Assessment. Association of Engineering Geologists 1996 Annual Meeting symposium (with J.R. Keaton).

Convener, Instability of Clay and Shale Hillslopes. Geological Society of America 1992 Annual Meeting symposium (with R.W. Fleming).

State Delegate, Western States Seismic Policy Council, alternate years 1992 - 1998.

Faculty Member, Watershed Assessment and Restoration short course, U.S. Forest Service National Advanced Resource Technology Center, April 1995.

Member, Geological Society of America, Engineering Geology Division Management Board. Secretary (2001-2002), Member-at-large (2000-2001).

Member, New Mexico State Engineer Mid-Rio Grande Technical Advisory Committee, 1995-1999.

Member, New Mexico Interstate Stream Commission Regional Water Planning Work Group, 1996.

Member, Institute Senate Research Committee, New Mexico Tech 1992-1994.

Member, External Awards Committee, Geological Society of America, 1998.

Member, E.B. Burwell, Jr. Award Panel, Engineering Geology Division, Geological Society of America, 1990-1992.

Vice-chair, Institute Senate, New Mexico Tech, 1994-1995.

Member, City of Cincinnati Infrastructure Commission, 1987.

Reviewer for: *Nature*, *Geological Society of America Bulletin*, *Water Resources Research*, *Journal of Geology*, *Journal of Geophysical Research*, *Bulletin of the Seismological Society of America*, *Engineering & Environmental Geoscience*, *Geology*, Columbia University Press, Oxford University Press, National Science Foundation, Wyoming Water Resources Research Institute.

AWARDS

Editor's Citation for Excellence in Scientific Refereeing, *Water Resources Research*, American Geophysical Union, 2001.

Certificate of Distinction from the New Mexico State Engineer in recognition of contributions made as a member of the Costilla Dam Independent Review Team, which resulted in the State's recovery of nearly \$5 million in construction cost overruns associated with the reactivation of a dormant landslide, 1994.

Outstanding Teaching Assistant, Department of Geology, University of Cincinnati, 1985.

PUBLICATIONS

Books

Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, 1999, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph 113, 220 pp.

Haneberg, W.C. and Anderson, S.A., editors, 1995, *Clay and Shale Slope Instability*: Geological Society of America Reviews in Engineering Geology 10, 160 pp.

Peer Reviewed Papers in Journals and Books

Haneberg, W.C., submitted, A rational probabilistic method for spatially distributed landslide hazard assessment: submitted to *Environmental & Engineering Geoscience*.

Haneberg, W.C., Bauer, P.W., and Chávez, W.X., Jr., 2002, Multilevel geologic hazard assessment mapping in the Rio Grande gorge, northern New Mexico, USA, in P. T. Bobrowsky, editor, *Geoenvironmental Mapping: Method, Theory and Practice*: A.A. Balkema, p. 75-91.

- Haneberg, W.C.**, 2000, Deterministic and probabilistic approaches to geologic hazard assessment: *Environmental & Engineering Geoscience*, v. 6, p. 209-226.
- Heynekamp, M.R., Goodwin, L.B., Mozley, P.S., and **Haneberg, W.C.**, 1999, Controls on fault-zone architecture in poorly lithified sediments, Rio Grande rift, New Mexico: implications for fault zone permeability and fluid flow, in Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph, v. 113, p. 27-50.
- Whitworth, T.M., **Haneberg, W.C.**, Mozley, P.S., and Goodwin, L.B., 1999, Solute sieving induced calcite precipitation on pulverized quartz sand— experimental results and implications for the membrane behavior of fault gouge, in Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph, v. 113, p. 149-158.
- Haneberg, W.C.**, 1999, Effects of valley incision on the subsurface state of stress— theory and application to the Rio Grande valley near Albuquerque, New Mexico: *Environmental & Engineering Geoscience*, v. 5, p. 117-131.
- Haneberg, W.C.**, Gomez, P., Gibson, A., and Allred, B., 1998, Preliminary measurements of stress-dependent hydraulic conductivity of Santa Fe Group aquifer system sediments, Albuquerque Basin, New Mexico: *New Mexico Geology*, v. 20, p. 14-20.
- Haneberg, W.C.**, 1995, Steady-state groundwater flow across idealized faults: *Water Resources Research*, v. 31, p. 1815-1820.
- Haneberg, W.C.**, 1995, Depth-porosity relationships and virgin specific storage estimates for the upper Santa Fe Group aquifer system, central Albuquerque Basin, New Mexico: *New Mexico Geology*, v. 17, p. 62-71.
- Haneberg, W.C.**, 1995, Groundwater flow and the stability of heterogeneous infinite slopes underlain by impervious substrata, in Haneberg, W.C. and Anderson, S.A., editors, *Clay and Shale Slope Instability*: Geological Society of America Reviews in Engineering Geology, v. 10, p. 63-78.
- Haneberg, W.C.** and Friesen, R.L., 1995, Tilts, strains, and ground-water levels near an earth fissure in the Mimbres Basin, New Mexico: *Geological Society of America Bulletin*, v. 107, p. 316-326.
- Haneberg, W.C.** and Gökce, A.Ö., 1994, *Rapid water-level fluctuations in a thin colluvium landslide west of Cincinnati, Ohio*: U.S. Geological Survey Bulletin 2059-C, 16 p.
- Haneberg, W.C.** and Bauer, P.W., 1993 Geologic setting and dynamics of a rockslide along NM 68, Rio Grande gorge, northern New Mexico: *Bulletin of the Association of Engineering Geologists*, v. 30, p. 7-16.
- Haneberg, W.C.**, Austin, G.S., and Brandvold, L.A., 1993, Soil lead distribution at an abandoned smelter site in Socorro, New Mexico: *Environmental Geology*, v. 21, p. 90-95.
- Haneberg, W.C.**, 1993, Drape folding of compressible elastic layers— II. Matrix solution for two-layer folds: *Journal of Structural Geology*, v. 15, p. 923-932.
- Haneberg, W.C.**, 1992, Drape folding of compressible elastic layers— I. Analytical solutions for vertical uplift: *Journal of Structural Geology*, v. 14, p. 713-721.
- Haneberg, W.C.**, 1992, Geologic hazards in New Mexico— Part 2: *New Mexico Geology*, v. 14, p. 45-52.

- Haneberg, W.C.**, 1992, Geologic hazards in New Mexico— Part 1: *New Mexico Geology*, v. 14, p. 34-41.
- Haneberg, W.C.**, 1991, Pore pressure diffusion and the hydrologic response of nearly-saturated, thin landslide deposits to rainfall: *Journal of Geology*, v. 99, p. 886-892.
- Haneberg, W.C.**, 1991, Observation and analysis of short-term pore pressure fluctuations in a thin colluvium landslide complex near Cincinnati, Ohio: *Engineering Geology*, v. 31, p. 159-184.
- Haneberg, W.C.** and Tripp, G., 1991, An irrigation-induced debris flow in northern New Mexico: *Bulletin of the Association of Engineering Geologists*, v. 28, p. 359-374.
- Haneberg, W.C.**, 1990, A Lagrangian interpolation method for three-point problems: *Journal of Structural Geology*, v. 12, p. 945-947.
- Haneberg, W.C.**, 1988, Some possible effects of consolidation on growth fault geometry: *Tectonophysics*, v. 148, p. 309-316.
- Haneberg, W.C.**, 1982, A paradigmatic analysis of Darwin's use of uniformitarianism in *The Origin of Species*: *Compass*, v. 60, p. 89-94.

Peer Reviewed Papers in Conference Proceedings

- Haneberg, W.C.**, 2000, Influence of valley form on the subsurface state of stress— application of simple elastic models to understand modes of Appalachian coal mine roof failure, in J. Girard, M. Liebman, C. Breeds, and T. Doe, editors, *Pacific Rocks 2000 (Proc. Fourth North American Rock Mechanics Symposium, Seattle, July 31 - August 1, 2000)*: Balkema, p. 873-879.
- Haneberg, W.C.**, 1993, Uncertainty in estimates of soil lead contamination at the Billing smelter site, Socorro, New Mexico, in S.N. Hoose, editor, *Proc. Symposium on Ethical Considerations in the Environmental Practice of Engineering Geology and Hydrogeology, 36 th Annual Meeting, Association of Engineering Geologists, San Antonio, Texas, October 14, 1993*, p. 30-37.
- Haneberg, W.C.** and Friesen, R.L., 1992, Diurnal groundwater level and deformation cycles near an earth fissure in the subsiding Mimbres Basin, New Mexico, in M.L. Stout, editor, *Proc. 35th Annual Meeting, Association of Engineering Geologists, Long Beach, California, October 2-9, 1992*, p. 46-53.
- Haneberg, W.C.**, Reynolds, C.B., and Reynolds, I.B., 1991, Geophysical characterization of soil deformation associated with earth fissures near San Marcial and Deming, New Mexico, in A.I. Johnson, editor, *Land Subsidence (Proc. 4th International Symposium on Land Subsidence, Houston, Texas, May 12-18, 1991)*: International Association of Hydrological Sciences Publication No. 200, p. 271-280.

Published Abstracts

- Haneberg, W.C.**, 2001, Spatially distributed probabilistic landslide hazard modeling as a first step towards quantitative risk assessment: Geological Society of America Abstracts with Programs, Annual Meeting.
- Clark, J.A. and **Haneberg, W.C.**, 2001, Engineering geologic and liquefaction susceptibility analysis of the Inner Valley, Rio Grande Basin, Albuquerque, New Mexico: GSA 2001 Rocky Mountain/South-Central Section Meeting Abstracts with Programs.

- Haneberg, W.C.**, 2000, An analytical method for estimating the probabilistic stability and reliability of forested slopes with variable pore water pressure: Western Pacific Geophysics Meeting, Tokyo, June 2000 (invited presentation).
- Dunn, A.B., and **Haneberg, W.C.**, 1999, Geologic setting and preliminary hydrologic analysis of the Costilla dam, New Mexico, landslide: Geological Society of America 1999 Annual Meeting Abstracts with Program.
- Haneberg, W.C.**, and Dunn, A.B., 1999, Reactivation of the Costilla dam, New Mexico, landslide during dam reconstruction: Geological Society of America 1999 Annual Meeting Abstracts with Program.
- Haneberg, W.C.**, 1999, Influence of lateral earth pressure on the Coulomb failure potential of dry and saturated slopes in granular materials: Association of Engineering Geologists 1999 Annual Meeting, Salt Lake City, UT.
- Love, D.W., Thomas, Jan, and **Haneberg, W.C.**, 1999, Origami leads to orogeny: Use of three-dimensional paper models for geoscience education from mineralogy to earthquakes: New Mexico Geological Society 1999 Spring Meeting.
- Haneberg, W.C.**, 1998, Influence of a forest road on the deposition of debris flow sediments, northern New Mexico: American Geophysical Union 1998 Fall Meeting.
- Dunn, A.B. and **Haneberg, W.C.**, 1998, Geologic setting of the Costilla dam, New Mexico, landslide: Association of Engineering Geologists 1998 Annual Meeting, Seattle, WA.
- Haneberg, W.C.**, 1998, Recent history of debris flow activity in the Bitter Creek drainage, northern New Mexico: *New Mexico Geology*, v. 20, pp. 47-48. (Talk given at New Mexico Geological Society spring meeting.)
- Mozley, P., Hall, J., Davis, J.M., Goodwin, L., Heynekamp, M., and **Haneberg, W.C.**, 1998, Spatial distribution of calcite cement in the Santa Fe Group, Rio Grande rift, New Mexico, USA: 15th International Sedimentological Conference, Alicante, Spain, April 1998.
- Haneberg, W.C.**, 1997, Calculated effects of valley incision on the state of stress in the Santa Fe Group aquifer system, Albuquerque Basin, New Mexico: American Geophysical Union 1997 Fall Meeting.
- Haneberg, W.C.**, 1997, The past, present, and future of engineering geology: *New Mexico Geology*, v. 19, p. 48 (invited presentation). (Talk given at New Mexico Geological Society spring meeting.)
- Mozley, P.S., Whitworth, T.M., **Haneberg, W.C.**, Goodwin, L.B., and Heynekamp, M., 1997, Controls on the spatial distribution of calcite cementation in fault zones: *AAPG-SEPM Annual Meeting Abstracts*, v. 6, p. 85.
- Haneberg, W.C.**, 1997, First order analysis of stresses in a layered elastic half space with periodic topography— implications for land subsidence potential above incised aquifer systems: *Geological Society of America Abstracts with Programs, South-Central/Rocky Mountain Sections*, v. 29, p. 12 (invited presentation).
- Haneberg, W.C.**, Bauer, P.W., and Chavez, W.X., Jr., 1996, Geologic, engineering geologic, and geologic hazards maps of a proposed highway corridor, Rio Grande gorge, northern New Mexico: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 282 (invited presentation).
- Haneberg, W.C.**, Goodwin, L.B., Heynekamp, M., and Mozley, P.S., 1996, Field observations and numerical models of the influence of faults on groundwater flow in clastic aquifer systems: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 255.

- Goodwin, L.B. and **Haneberg, W.C.**, 1996, Deformational fabrics and inferred permeability of faulted sands from the Rio Grande rift, New Mexico: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 255.
- Heynekamp, M.R., Goodwin, L.B., Mozley, P.S., and **Haneberg, W.C.**, 1996, The influence of grain size on dragging and mixing of poorly consolidated sediments along a normal fault: Implications for cross-fault fluid flow: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 255.
- Sigda, J.M., Mozley, P.S., Goodwin, L.B., and **Haneberg, W.C.**, 1996, Small displacement fault controls on single phase permeability in poorly consolidated sands: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 256.
- Whitworth, T.M., **Haneberg, W.C.**, DeRosa, G., Romero, D., Mozley, P.S., and Goodwin, L.B., 1996, Solute sieving by pulverized quartzofeldspathic sands-- experimental results and implications for the membrane behavior of fault gouge: *Geological Society of America Abstracts with Programs, 1996 Annual Meeting*, v. 28, p. 256.
- Haneberg, W.C.**, 1996, Deterministic and probabilistic approaches to hazard assessment: Association of Engineering Geologists 1996 Annual Meeting Abstracts.
- Mozley, P.S., Goodwin, L.B., Heynekamp, M., and **Haneberg, W.C.**, 1996, Using the spatial distribution of calcite cementation to infer paleoflow conditions in fault zones: Examples from the Albuquerque Basin, New Mexico: *AAPG-SEPM Annual Meeting Abstracts*, v. 5, p. 102.
- Haneberg, W.C.**, 1995, Geophysical log derived estimates of compaction potential for the upper Santa Fe Group aquifer system, Albuquerque Basin, New Mexico: *EOS, Transactions American Geophysical Union, 1995 Fall Meeting Supplement*, p. 197.
- Haneberg, W.C.** and Hawley, J.W., 1994, Porosity and permeability characteristics of lithofacies in the upper Santa Fe Group, Albuquerque Basin, New Mexico: *Geological Society of America Abstracts with Programs, 1994 Annual Meeting*, v. 26, p. 204.
- Haneberg, W.C.**, Goodwin, L. B., and Ferranti, C. J., 1994, Pseudotachylite in a metamorphic core complex— analytical modeling of the effect of compositional variation on frictional melting: *Geological Society of America, 1994 Annual Meeting Abstracts with Programs*, v. 26, n. 7, p. 269.
- Haneberg, W.C.**, 1994, Simple analytical solutions for steady-state groundwater flow across faults: *Geological Society of America Abstracts with Programs, 1994 Rocky Mountain Section Meeting*, v. 26, p. 16.
- Haneberg, W.C.**, 1993, Pressure head distribution and the stability of heterogeneous frictional soils: *EOS, Transactions American Geophysical Union, 1993 Fall Meeting Supplement*, p. 310 (invited presentation).
- Haneberg, W.C.**, 1992, A mass balance model for the hydrologic response of fine-grained hillside soils to rainfall: *Geological Society of America Abstracts with Programs, 1992 Annual Meeting*, v. 24, p. 203 (invited presentation).
- Haneberg, W.C.**, 1992, Compressibility, stiffness, and some numerical experiments with layered drape folds in compressible elastic media: *New Mexico Geology*, v. 14, p. 62. (Talk given at New Mexico Geological Society spring meeting.)

- Bauer, P.W. and **Haneberg, W.C.**, 1992, Geologic setting for rapid mass-wasting in the Rio Grande gorge area, Taos County, New Mexico: *New Mexico Geology*, v. 14, p. 63. (Talk given at New Mexico Geological Society spring meeting.)
- Friesen, R.L. and **Haneberg W.C.**, 1992, Digital documentation of deformation and groundwater levels near an earth fissure in the Mimbres Basin, New Mexico: *New Mexico Geology*, v. 14, p. 63. (Talk given at New Mexico Geological Society spring meeting.)
- Haneberg, W.C.**, 1992, Thin-plate analysis of land subsidence and fissuring in the Mimbres Basin, southern New Mexico: *Geological Society of America Abstracts with Programs, 1992 Cordilleran Section Meeting*, v. 24, p. 30.
- Haneberg, W.C.**, 1991, Grain size distributions and sedimentary facies associated with a modern debris flow in northern New Mexico: *Geological Society of America Abstracts with Programs, 1991 Annual Meeting*, v. 23, p. 40.
- Haneberg, W.C.** and Tripp, G., 1991, An irrigation-induced debris flow near Cordova, New Mexico: *Geological Society of America Abstracts with Programs, 1991 Rocky Mountain/South-Central Section Meeting*, v. 23, p. 29.
- Haneberg, W.C.**, 1991, Mechanics of single-layer drape folding– some simple models with practical applications: *New Mexico Geology*, v. 13, p. 65. (Talk given at New Mexico Geological Society spring meeting.)
- Haneberg, W.C.**, 1990, Draping and differential compaction of compressible elastic soil layers under the influence of gravity: *Geological Society of America Abstracts with Programs, 1990 Annual Meeting*, v. 22, p. 246-247.
- Haneberg, W.C.** and Reynolds, C.B., 1990, Geophysical constraints on a mechanical model for the origin of the San Marcial earth fissure: *New Mexico Geology*, v. 12, p. 38. (Talk given at New Mexico Geological Society spring meeting.)
- Reynolds, C.B., Reynolds, I.B., and **Haneberg, W.C.**, 1990, Refraction velocity sections– an aid in shallow reflection interpretation: *Expanded Abstracts, 60th Annual Meeting, Society of Exploration Geophysicists, San Francisco, California*, v. 1, p. 383.
- Haneberg, W.C.**, 1989, Field observations and theoretical insights on the response of hillside soils to rainfall: *Geological Society of America Abstracts with Programs, 1989 Annual Meeting*, v. 21, p. 230.
- Haneberg, W.C.**, 1989, Propagation of boundary pore pressure perturbations through saturated or tension saturated soils: *Abstracts and Program, 32nd Annual Meeting, Association of Engineering Geologists, Vail, Colorado, October 1-6, 1989*, p. 76.
- Haneberg, W.C.**, 1985, Dilational fractures in the Lower Cambrian Rome Formation, southwest Virginia: *American Association of Petroleum Geologists Bulletin*, v. 70, p. 782.
- Haneberg, W.C.**, 1984, Fracturing and brecciation along the Max Meadows thrust near Wytheville, Virginia: *American Association of Petroleum Geologists Bulletin*, v. 68, p. 483.

Miscellaneous Publications

- Haneberg, W.C.**, in press, New landslide hazard assessment tools for planners, in *Landslide Hazards and Planning*: American Planning Association Guidebook (invited contribution).
- Haneberg, W.C.**, 2002, To exclude or not to exclude: The when and why of landslides: *Claims* (March).

- Haneberg, W.C.**, 2001, A probabilistic approach to spatially distributed landslide hazard modeling: *Earth Observation Magazine*, v. 10, no. 12 (December 2001), p. 10-12.
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GRADUATE STUDENTS SUPERVISED

- Jodi Clark, *Engineering geologic and preliminary liquefaction susceptibility mapping of Rio Grande alluvium, Albuquerque, New Mexico*. M.S. in Geology, NM Tech, in progress. Research advisor.
- Geff Rawling, *Hydrogeologic characterization of the Sand Hill fault zone, Albuquerque Basin, New Mexico*. Ph.D. in Geology, NM Tech, 2001. Committee member.
- Andrew Dunn, *Geology and hydrogeology of the Costilla Dam landslide, northern New Mexico*. M.S. in Hydrology, NM Tech, 2001. Research advisor.
- Michiel Heynekamp, *Controls on fault-zone architecture and fluid flow in poorly consolidated sediments: the Sand Hill fault, central New Mexico*. M.S. in Geology, NM Tech, 1998. Committee member.
- Daniel Detmer, *Permeability, porosity, and grain size distributions of Pliocene and Quaternary sediments in the Albuquerque Basin, central New Mexico*. M.S. in Geology, NM Tech, 1995. Research advisor.
- William Linderfelt, *Field study of capture zones in a shallow sand aquifer*. Ph.D. in Hydrology, NM Tech, 1994. Committee member.
- Y.-C. Hsieh, *Identification of debris flow and soil creep deposits in Copper Canyon, Socorro County, New Mexico*. M.S. in Geology, NM Tech, 1994. Research advisor.
- Robert Friesen, *Cyclic flexure of surficial strata near an earth fissure in the Mimbres Basin, southern New Mexico*. M.S. in Mineral Engineering, NM Tech, 1992. Research advisor.

Garret Ross, *Environmental geologic maps of Santa Fe County, New Mexico*. M.S. in Mineral Engineering, NM Tech, 1992. Research advisor.

Valerie Rhodes, *Laboratory study of geogrid-reinforced sand-clay mixtures from Cenozoic basin-fill deposits, central New Mexico*. M.S. in Mineral Engineering, NM Tech, 1991. Research advisor.

UNIVERSITY COURSES TAUGHT

Geol/Hydro 572	Mechanics of Earth Surface Processes (NMT, 1997, 1998)
Geol/Hydro 504	Hydrogeology (NMT, team taught, 1994)
Geol/Geoph 558	Brittle Deformation (Mechanics of Earthquakes) (NMT, team taught, 1994)
Geol 571	Mechanics of Geologic Processes (NMT, 1993)
Geol 391	Structural Geology (PSU, Fall 2000)
Mineral Engrg 540	Numerical Methods in Geotechnical Engineering (NMT, 1990, 1992)
Mineral Engrg 581	Geologic Hazards (NMT, 1991)
Mineral Engrg 427	Site Investigation (NMT, 1992)

NMT: New Mexico Tech, PSU: Portland State University